



VISIBILITY IN SCENIC AREAS

TRENDS IN VISIBILITY

EPA monitors visibility trends in 155 of the 156 National parks and wilderness areas meeting the criteria established in the 1977 Clean Air Act amendments. Long-term trends in visibility on the annual 20 percent best and worst visibility days are shown in Figure 29. Most locations show improving visibility (decreasing haze) for the best visibility days, only Everglades National Park in Florida shows increasing haze. Five locations—Mt. Rainier National Park, Wash.; Great Smoky Mountains National Park, Tenn.; Great Gulf Wilderness, N.H.; Canyonlands National Park, Utah; and Snoqualmie Pass, Wash.—show a notable decrease in haze for the worst days.

The Regional Haze Rule requires states to identify the most effective means of preserving conditions in these areas when visibility is at its best—based on the best 20 percent visibility days—and to gradually improve visibility when it is most impaired—based on the worst 20 percent visibility days. States are required to adopt progress goals for improving visibility, or visual range, from baseline conditions (represented by 2000 to 2004) to achieve natural background conditions within 60 years (represented by 2064). States determine whether they are meeting their goals by comparing visibility conditions from one five-year average to another (e.g., 2000-2004 to 2013-2017). The glide path to natural conditions in 2064 for the Shenandoah National Park is shown in Figure 30.

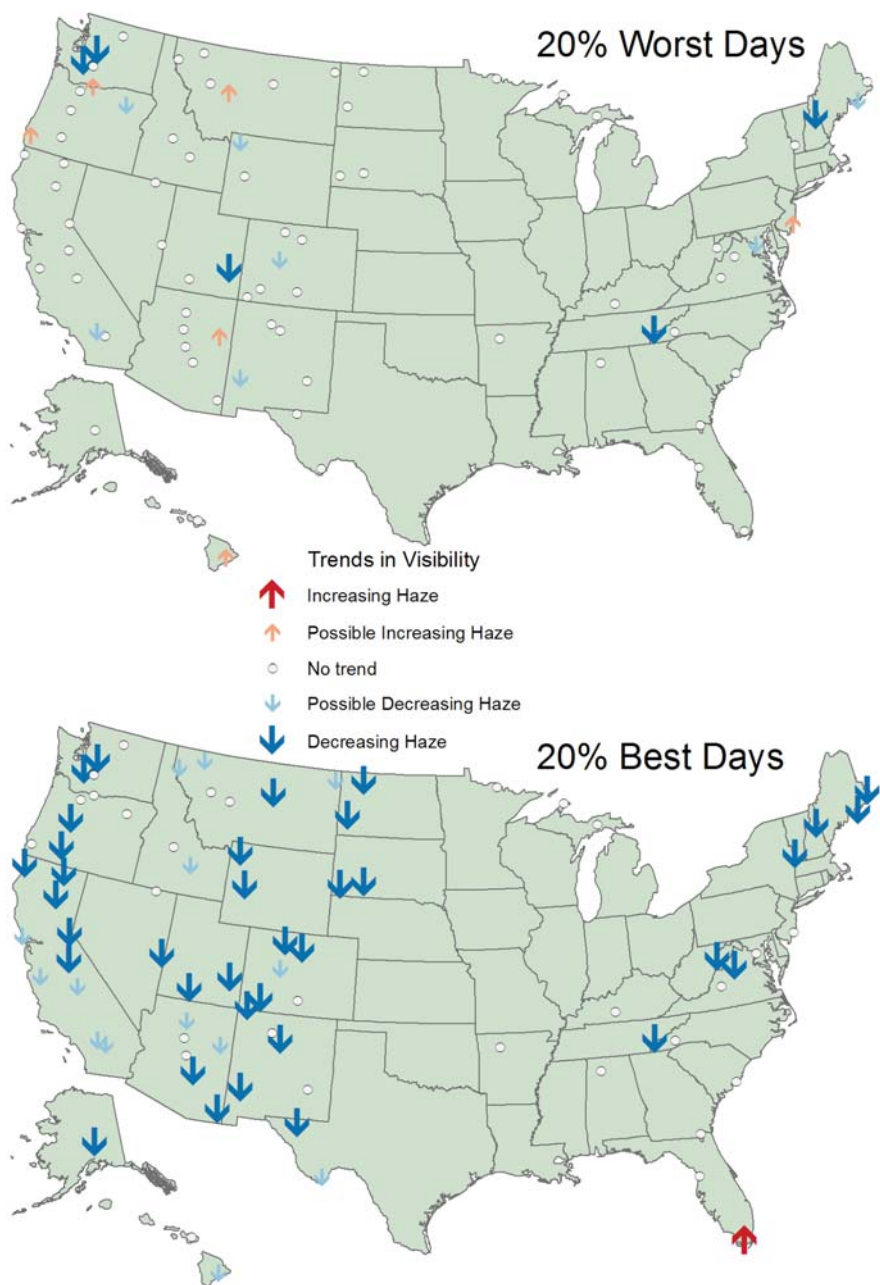
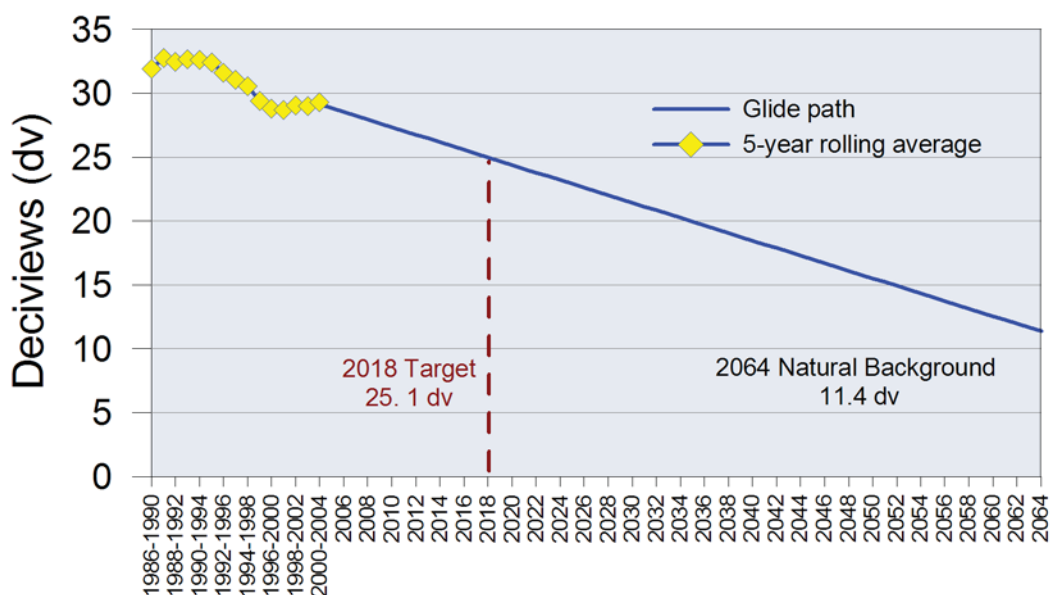


Figure 29. Trends in visibility on the 20 percent worst and best visibility days, 1996-2006.

(Source: <http://www.nature.nps.gov/air/>)

Note: Visibility trends using a haze index for the annual average for the 20 percent best and worst visibility days are based on aerosol measurements collected at Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring sites. The haze index is measured in deciviews (dv), a visibility metric based on the light extinction coefficient that expresses incremental changes in perceived visibility. Sites having at least six years of complete data were used to compute the change in dv per year over the trend period and its statistical significance.

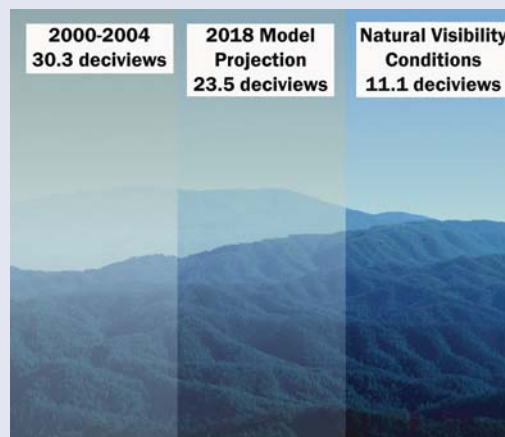
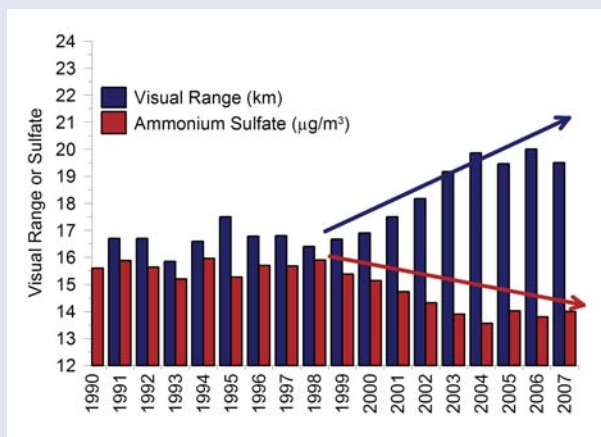


*Figure 30. Glide path to natural conditions in 2064 for Shenandoah (deciviews).
(Source: Visibility Improvement State and Tribal Association of the Southeast – VISTAS)*

Notes: A change of one deciview is a change in visibility that is discernable. The figure shows a 5-year rolling average for the 20 percent worst visibility days.

Visibility at Great Smoky Mountains National Park

Visibility at Great Smoky Mountains National Park for the 20 percent haziest days in the baseline period 2000-2004 (30.3 deciviews) was among the poorest in the country. However, projected improvements in visibility in the Southern Appalachian Mountains, such as the Great Smoky Mountains, are among the largest in the country. Ammonium sulfate is the major contributor to haze in the southeastern U.S. There has been a small but significant reduction in sulfate and corresponding improvement in visibility at Great Smoky Mountains National Park between 1990 and 2004. These improvements are due primarily to SO₂ emissions reductions under the Acid Rain Title IV provisions of the 1990 Clean Air Act Amendments.



Visibility Improvement State and Tribal Association of the Southeast (VISTAS) modeling projects that emissions reductions under existing state and federal regulations will significantly improve visibility by 2018. The uniform rate of progress for improving visibility between baseline conditions and natural background would mean visibility of 25.8 deciviews in 2018; modeling indicates that visibility in 2018 will be 23.5 deciviews, better than the uniform rate of progress, and is a 6.8 deciview improvement compared to baseline conditions (2000-2004). Natural visibility conditions on the 20 percent haziest days at Great Smoky Mountains National Park are projected to be 11.1 deciviews. Considerable additional progress is needed to achieve natural visibility.

(Source: Images from WinHaze Visual Air Quality Model, Air Resource Specialists, Inc. and Jim Renfro, Great Smoky Mountains National Park)